

CLAIMS:

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is:

- 1 1. An automatic flowcharting method for diagrammatically representing a
- 2 multi-nodal process comprising processing operations and decision operations, said
- 3 method comprising:
 - 4 (a) converting processing operations and decision operations of said multi-
 - 5 nodal process into a data structure;
 - 6 (b) analyzing said data structure for identifying a first group of processing
 - 7 operations that appear once in said data structure, and for identifying a second group of
 - 8 processing operations that are associated with two or more decision operations in said
 - 9 data structure;
 - 10 (c) traversing said data structure to generate an ordered sequence of
 - 11 processing operations for visual representation; and
 - 12 (d) generating a diagrammatic representation of said ordered sequence
 - 13 including orienting successive processing operations in a vertical dimension and
 - 14 associating attributes to each processing operation of said processing operations
 - 15 according to their identified group while offsetting each successive processing operation
 - 16 in a horizontal dimension, and linking each processing operation of said second group to
 - 17 a further processing step of said processing steps according to a decision operation of
 - 18 said two or more decision operations.

- 1 2. The automatic flowcharting method according to Claim 1, said method
- 2 further comprising the step of:
 - 3 associating a first visual attribute to said processing operations in said first
 - 4 selected group and a second visual attribute to said processing operations in said second
 - 5 selected group.
- 1 3. The automatic flowcharting method according to Claim 2, wherein said
- 2 first visual attribute is a first color.
- 1 4. The automatic flowcharting method according to Claim 2, wherein said
- 2 second visual attribute is a second color.
- 1 5. The automatic flowcharting method according to Claim 1, said
- 2 analyzing step further comprising:
 - 3 identifying a third group of processing operations that repeatedly appear in
 - 4 said data structure.
- 1 6. The automatic flowcharting method according to Claim 5, said
- 2 analyzing step further comprising:
 - 3 associating a third visual attribute to said processing operations in said
 - 4 third group.
- 1 7. The automatic flowcharting method according to Claim 6, wherein said
- 2 third visual attribute is a third color.

1 8. The automatic flowcharting method according to Claim 1, said method

2 further comprising a step of:

3 reading an input file containing said processing operations and said
4 decision operations for said multi-nodal process, said processing operations and said
5 decision operations being arranged into a plurality of records each of said plurality of
6 records containing a first processing operation, a second processing operation and a
7 decision operation.

1 9. The automatic flowcharting method according to Claim 8, said method

2 further comprising a step of:

3 automatically exporting said processing operations and said decision
4 operations for said multi-nodal process from a database into said input file.

1 10. The automatic flowcharting method according to Claim 1, said

2 analyzing step further comprising a step of:

3 detecting deadlock conditions in said sequence.

1 11. The automatic flowcharting method according to Claim 1, wherein the

2 linking of each processing operation of said second group includes aligning said
3 processing operation to said further processing step in said vertical dimension.

1 12. The automatic flowcharting method according to Claim 1, wherein

2 said each successive processing operation is offset in said horizontal dimension relative
3 to an immediate prior processing operation.

- 1 13. The automatic flowcharting method according to Claim 1, said method
- 2 further comprising a step of:
 - 3 writing an output file for said generated diagrammatic representation of
 - 4 said multi-nodal process.

1 15. The automatic flowcharting method according to Claim 14 wherein
2 said output file is transmitted over a communications network.

- 1 16. The automatic flowcharting method according to Claim 15 wherein
- 2 said communications network is one selected from the group comprising:
- 3 an Intranet, and
- 4 the Internet.

- 1 17. An automatic flowcharting system for diagrammatically representing a
- 2 multi-nodal process comprising processing operations and decision operations in a client-
- 3 server environment, said system comprising:
 - 4 (a) a server interconnected via a communications network to a client, said
 - 5 server including:
 - 6 (i) a mechanism for converting processing operations and decision
 - 7 operations of said multi-nodal process into a data structure;

8 (ii) a mechanism for analyzing said data structure for identifying a
9 first group of processing operations that appear once in said data structure, and for
10 identifying a second group of processing operations that are associated with two or more
11 decision operations in said data structure; and
12 (iii) a mechanism for traversing said data structure to generate an
13 ordered sequence of processing operations for visual representation;
14 (iv) a mechanism for generating a diagrammatic representation of
15 said ordered sequence including orienting said processing operations in a vertical
16 dimension and associating attributes to each processing operation of said processing
17 operations according to their identified group while offsetting each successive processing
18 operation in a horizontal dimension, and linking each processing operation of said second
19 group to a further processing step of said processing steps according to a decision
20 operation of said two or more decision operations;

21 (b) said client for receiving said generated diagrammatic representation of
22 said multi-nodal process via said communications network in a form for presentation by
23 said client.

1 18. The automatic flowcharting system according to Claim 17, said server
2 further including:

3 a mechanism for associating a first visual attribute o said processing
4 operations in said first group and a second visual attribute to said processing operations
5 in said second group.

1 19. The automatic flowcharting system according to Claim 18, wherein
2 said first visual attribute is a first color.

1 20. The automatic flowcharting system according to Claim 18, wherein
2 said second visual attribute is a second color.

1 21. The automatic flowcharting system according to Claim 17, said
2 mechanism for analyzing further comprising:
3 a mechanism for identifying a third group of processing operations that
4 repeatedly appear in said data structure.

1 22. The automatic flowcharting system according to Claim 21, said
2 mechanism for analyzing further comprising:
3 a mechanism for associating a third visual attribute to said third group of
4 processing operations.

1 23. The automatic flowcharting system according to Claim 22, wherein
2 said third visual attribute is a third color.

1 24. The automatic flowcharting system according to Claim 17, said server
2 further including:
3 a mechanism for reading an input file containing said processing
4 operations and said decision operations for said multi-nodal process, said processing
5 operations and said decision operations being arranged into a plurality of records each of

1 said plurality of records containing a first processing operation, a second processing
2 operation and a decision operation.

1 25. The automatic flowcharting system according to Claim 24, said server
2 further including:

3 a mechanism for automatically exporting said processing operations and
4 said decision operations for said multi-nodal process from a database into said input file.

1 26. The automatic flowcharting system according to Claim 17, said
2 mechanism for analyzing further comprising:
3 a mechanism for detecting deadlock conditions in said sequence.

1 27. The automatic flowcharting system according to Claim 17, wherein in
2 the mechanism for generating, each processing operation of said second selected group is
3 vertically linked to said further processing step of said processing steps.

1 28. The automatic flowcharting system according to Claim 17, said
2 mechanism for generating further comprising:
3 a mechanism for determining a horizontal indentation for each successive
4 processing operation of said processing operations.

1 29. The automatic flowcharting system according to Claim 17, said server
2 further including:

1 a mechanism for writing an output file of said generated diagrammatic
2 representation of said multi-nodal process.

1 30. The automatic flowcharting system according to Claim 28, wherein
2 said output file is written in a markup language for presentation in a web-enabled
3 browser by said client.

1 31. The automatic flowcharting system according to Claim 30, wherein
2 said output file is transmitted over said communications network.

1 32. The automatic flowcharting method according to Claim 31, wherein
2 said communications network is one selected from the group comprising:
3 an Intranet, and
4 the Internet.

1 33. A program storage device readable by a machine, tangibly embodying
2 a program of instructions executable by the machine to perform an automatic
3 flowcharting method for diagrammatically representing a multi-nodal process comprising
4 processing operations and decision operations, said method comprising:
5 (a) converting processing operations and decision operations of said multi-
6 modal process into a data structure;
7 (b) analyzing said data structure for identifying a first group of processing
8 operations that appear once in said data structure, and for identifying a second group of

9 processing operations that are associated with two or more decision operations in said
10 data structure; and

11 (c) traversing said data structure to generate an ordered sequence of
12 processing operations for visual representation;

13 (d) generating a diagrammatic representation of said ordered sequence
14 including orienting said processing operations of in a vertical dimension and associating
15 attributes to each processing operation of said processing operations according to their
16 identified group while offsetting each successive processing operation of said in a
17 horizontal dimension, and linking each processing operation of said second group to a
18 further processing operation of said processing operations according to a decision
19 operation of said two or more decision operations.

1 34. The program storage device according to Claim 33, said method
2 further comprising the step of:

3 associating a first visual attribute to said processing operations in said first
4 group and a second visual attribute to said processing operations in said second group.

1 35. The program storage device according to Claim 34, wherein said first
2 visual attribute is a first color.

1 36. The program storage device according to Claim 34, wherein said
2 second visual attribute is a second color.

1 37. The program storage device according to Claim 33, said analyzing step
2 further comprising:
3 identifying a third group of processing operations that repeatedly appear in
4 said data structure.

1 38. The program storage device according to Claim 37, said analyzing
2 step further comprising:
3 associating a third visual attribute to said third group of processing
4 operations

1 39. The program storage device according to Claim 38, wherein said third
2 visual attribute is a third color

1 40. The program storage device according to Claim 33, said method
2 further comprising a step of:
3 reading an input file containing said processing operations and said
4 decision operations for said multi-nodal process, said processing operations and said
5 decision operations being arranged into a plurality of records each of said plurality of
6 records containing a first processing operation, a second processing operation and a
7 decision operation.

1 41. The program storage device according to Claim 40, said method
2 further comprising a step of:

1 automatically exporting said processing operations and said decision
2 operations for said multi-nodal process from a database into said input file.

1 42. The program storage device according to Claim 33, said analyzing
2 step for determining a sequence further comprising a step of:
3 detecting deadlock conditions in said sequence.

1 43. The program storage device according to Claim 33, wherein the
2 linking of each processing operation of said second group includes visually aligning said
3 processing operation in said vertical dimension to said further processing step.

1 44. The program storage device according to Claim 33, wherein said each
2 successive processing operation is offset in said horizontal dimension relative to an
3 immediate prior processing operation.

1 45. The program storage device according to Claim 33, said method
2 further comprising a step of:
3 writing an output file of said generated diagrammatic representation of
4 said multi-nodal process.

1 46. The program storage device according to Claim 45, wherein said
2 output file is written in a markup language for presentation in a web-enabled browser.

1 47. The program storage device according to Claim 46, wherein said
2 output file is transmitted over a communications network.

